

5

**Claims:**

1. A floor covering substrate, said floor covering substrate having applied thereon a treating composition, said composition comprising:

- (a) a fluorochemical-containing repellent component;
- (b) a stain resist component; and
- (c) a particulate component;

10 wherein said treating composition is adapted to provide to said floor covering substrate substantial stain release and substantial resistance to dry soiling.

2. The substrate of claim 1 wherein said stain resist component comprises at least one component selected from the group consisting of: sulfonated novolak resins, acrylic polymers, sulfonated polyester polymers, and sulfonated surfactants.

3. The substrate of claim 1 wherein said fluorochemical comprises an acrylic polymer.

4. The substrate of claim 1 wherein said stain resist component is selected from the group consisting of: fluorochemical agents, acid-containing acrylic polymers, copolymers, ethoxylated polyesters, nylon, cellulose derivatives, polyacrylamides, 5 sulfonated polymers, and sulfonated polyesters.

5. The substrate of claim 1 wherein said substrate is scoured.

6. The substrate of claim 1 wherein said particulate component comprises at least one component selected from the group consisting of: silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing materials, basic metal salt materials, and metal oxide materials.

5           7. A floor covering having an applied composition for imparting soil resistance, stain resistance, and stain release, said floor covering comprising:

(a) a scoured substrate having fibers forming a pile;

5           (b) a composition applied to said scoured substrate, said composition comprising:

10           (i) a first fluorochemical repellent component, said fluorochemical repellent component being provided at a concentration of at least about 0.1% SOC;

             (ii) a second stain blocking component, said stain blocking component

15           being selected from one or more of the group consisting of: sulfonated novolak resins, acrylic polymers, sulfonated polyester polymers, sulfonated surfactants, fluorochemical agents, acid-containing acrylic or acrylate polymers and copolymers, ethoxylated polyesters, ethoxylated nylon, cellulose derivatives, polyacrylamides, sulfonated polymers, and sulfonated polyesters; and

             (iii) an inorganic particulate component, said inorganic particulate component being selected from the group consisting of: silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing

materials, inorganic oxide materials, basic metal salt materials, and metal oxide materials; and

20 (c) wherein said composition is adapted for imparting substantial stain resistance and stain release to said floor covering.

8. The floor covering of claim 7 further wherein said composition further comprises a crosslinking compound.

9. The floor covering of claim 7 wherein said composition further comprises at least two distinct component types which afford stain release properties to said floor covering.

10. The floor covering of claim 7 wherein said fibers of said scoured substrate comprise less than about 0.3% by weight oil residue.

11. A treated scoured floor covering having applied thereon a composition for imparting soil resistance and stain release to said treated floor covering, said floor covering comprising:

5 (a) a scoured substrate having a plurality of fibers, said fibers having less than about 0.3% by weight oil residue;

(b) a composition comprising:

(i) a fluorochemical repellent component;

- (ii) a stain resist component;
- 10 (iii) at least one component which imparts substantial stain release to said substrate; and
- (iv) an inorganic particulate component.

12. The treated scoured floor covering of claim 11 in which said composition of said treated scoured carpet further comprises a bleach resistant component.

13. The treated scoured floor covering of claim 11 wherein said fluorochemical repellent component is provided at a concentration of at least about 0.1% SOC.

14. The treated floor covering of claim 11 wherein said stain resist component comprises at least one component selected from the group consisting of: sulfonated novalak resins, acrylic polymers, sulfonated polyester polymers, and sulfonated surfactants and combinations thereof.

5 15. The floor covering of claim 11 wherein said repellent component comprises a hydrophilic fluoroalkyl acrylate copolymer.

16. The floor covering of claim 11 wherein said stain resist component is selected from the group consisting of: fluorochemical agents, acid-containing acrylic

polymers, copolymers, ethoxylated polyesters, ethoxylated nylon, cellulose derivatives,  
5 polyacrylamides, sulfonated polymers, and sulfonated polyesters.

17. The floor covering of claim 11 wherein said floor covering is selected from the group consisting of: bonded carpet, woven carpet, nonwoven carpet, rugs, carpet mats, noncushioned carpets and carpet tiles.

18. A method for imparting soil resistance, stain resistance, and stain release properties to a floor covering textile comprising the steps of

- providing a textile, said textile being comprised in part of fibers,
- 5 - scouring said textile,
- applying a chemical finish to said textile, said chemical finish being comprised

of:

- (a) a repellent component;
- (b) a stain blocking component, wherein said stain blocking component

10 provides stain resistance as well stain release characteristics to said textile; and

- (c) a particulate component.

19. The method of claim 18 wherein said scoured floor covering textile comprises a carpet having a pile comprised of fibers, further wherein the percentage of oil residue in said scoured carpet fibers is less than about 0.3 percent by weight.

20. A process for making a floor covering article of manufacture, said process comprising the steps of:

-providing a fibrous substrate, said fibrous substrate being comprised in part of

5 tufted textile fibers or filaments;

-contacting said fibrous substrate with an aqueous treatment composition

comprising:

(a) a fluorochemical repellent component, said fluorochemical component

being provided in a concentration of at least about 0.1 % SOC;

10 (b) a stain resist component, said stain resist component being selected from at least one of the group consisting of: sulfonates, sulfonated novolak resins, and acrylic polymers; and

(c) a stain release component, said stain release component being selected from the group consisting of: fluorochemical agents, acid-containing acrylic polymers and copolymers, ethoxylated polyesters, ethoxylated nylon, cellulose derivatives, polyacrylamides, sulfonated polymers, and sulfonated polyesters; and

15 (d) a particulate component, said particulate component being selected from the group consisting of: silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing materials, inorganic oxides, basic metal salts, and metal oxides.

21. A carpet tile suitable for disposition as discrete modular units across a flooring surface, said carpet tile comprising:

(i) a primary carpet fabric having a pile side and an underside with a plurality of pile forming yarns projecting outwardly from said pile side, said the pile side having 5 fibers, said fibers having applied thereon a composition capable of affording substantial stain release to said fibers, said composition comprising:

- (a) a repellent component;
- (b) a stain resist component; and
- (c) a particulate component;

10 (ii) an adhesive layer consisting essentially of at least one adhesive extending away from the underside of said primary carpet fabric; and

(iii) a layer of stabilizing material in contacting relationship with said adhesive layer such that said layer of stabilizing material is held in place at a fixed position below said primary carpet fabric.

15

22. A treated fiber-containing floor covering, said floor covering having applied to said fibers a composition comprising:

(a) a fluorochemical repellent component, said fluorochemical repellent

5 component being provided at a concentration of at least about 0.1% SOC;

(b) a component capable of providing to said fiber-containing floor covering a substantial stain resist;

(c) a component capable of providing to said fiber-containing floor covering a substantial stain release; and

10 (d) a particulate component, said particulate component selected from the group of materials consisting of silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing materials, inorganic oxides, basic metal salts, and metal oxides.

23. The floor covering of claim 22 further wherein said particulate composition comprises at least one silica-containing material.

24 The floor covering of claim 22 further wherein said composition comprises at least one species of zirconia-containing material.

25. The floor covering of claim 22 wherein said composition is applied upon said fibers of said floor covering, further wherein said floor covering comprises a pile-containing carpet, said carpet being selected from the group of carpet types consisting

5 of: bonded, woven, nonwoven, area rugs, carpet mats, non-cushioned carpets, and carpet tiles.

26. The pile-containing carpet of claim 25 wherein said carpet is tufted.

27. The tufted carpet of claim 26 wherein said fibers of said tufted carpet are comprised of nylon 6.

28. The tufted carpet of claim 26 wherein said fibers of said tufted carpet are comprised of nylon 6,6.

29. The tufted carpet of claim 26 wherein said tufted carpet is a cut pile construction.

30. The tufted carpet of claim 26 wherein said tufted carpet is a loop pile construction.

31. The carpet of claim 25 wherein said carpet is scoured, said carpet having fibers with less than about 0.3% by weight oil residue.

32. The carpet of claim 25 wherein said fibers of said carpet comprise polyester fibers.

33. The carpet of claim 25 wherein said fibers of said carpet comprise Type 6 nylon fibers.

34. The carpet of claim 25 wherein said fibers of said carpet comprises fibers selected from at least one of the group of fibers consisting of: polyester fibers, polypropylene fibers, wool fibers, polylactic acid fibers, acrylic fibers, and nylon 6<sup>5</sup> fibers.

35. The carpet of claim 25 wherein said particulate component comprises a silica-containing material.

36. The carpet of claim 25 wherein said particulate component comprises a zirconia-containing material.

37. The carpet of claim 25 wherein said particulate component comprises a alumina-containing material.

38. The carpet of claim 25 wherein said particulate component provides a primary particle size of between about 1 nm and about 100 nm.

39. A composition for imparting soil resistance and stain release to a pile-containing carpet, said composition comprising:

- 5           (a) a fluoroalkyl acrylate copolymer repellent component;  
             (b) a novolac resin-containing component;  
             (c) at least one component capable of imparting substantial stain release to said carpet; and  
             (d) a particulate component.

40. The composition of claim 39 further comprising:

- (e) a crosslinking compound.

41. The composition of claim 39 wherein said at least one component capable of imparting stain release comprises a fluorochemical-containing compound, wherein said fluorochemical-containing compound is provided at a concentration level of at least 5 about 0.1% SOC.

42. A composition for treating a carpet, said composition comprising:

- (a) a fluorochemical repellent component, said fluorochemical repellent component being applied at a concentration of at least about 0.1% SOC;  
5           (b) a stain blocking component adapted for providing stain release; and  
             (c) a particulate component, said particulate component selected from the group of materials consisting of silica-containing materials, zirconium-containing materials,

titanium-containing materials, alumina-containing materials, inorganic oxides, basic metal salts, and metal oxides;

10 wherein said composition is adapted for imparting substantial dry soil resistance, stain resist and a substantial stain release to said carpet.

43. The composition of claim 42 further wherein said particulate composition comprises a silica-containing material.

44. The composition of claim 42 further wherein said particulate composition comprises zirconia-containing material.

45. A scoured fibrous textile substrate treated with the composition of claim 42.

46. A floor covering having applied thereon a treating composition, said composition consisting essentially of:

- (a) a fluorochemical repellent component applied in a concentration of at least 5 about 0.1 percent SOC;
- (b) a stain resist component, said stain resist component being selected from the group consisting of: sulfonated novalak resins and acrylic polymers;
- (c) a stain release component, said stain release component being selected from one or more of the group consisting of: fluorochemicals, acrylic polymers, copolymers, 10 acrylic copolymers, ethoxylated polyesters, ethoxylated nylon, cellulose derivatives,

polyacrylamides, sulfonated polymers, and sulfonated polyesters and blends thereof;  
and

(d) a particulate component.

47. A treated floor covering substrate, said floor covering substrate having  
applied thereon a treating composition, said composition comprising:

(a) a repellent component;

5 (b) a stain resist component, said stain resist component further being capable of  
providing stain release properties to said floor covering substrate; and

(c) a particulate component;

wherein said floor covering substrate provides a relative resistance to dry soiling  
that reflects a color shade change  $\Delta \Delta E$  in absolute value upon soiling and vacuuming  
10 of about 30 or less.

48. The treated floor covering substrate of claim 47 wherein the  $\Delta \Delta E$  value in  
absolute value is about 20 or less.

49. The treated floor covering substrate of claim 47 wherein the  $\Delta \Delta E$  value in  
absolute value is about 10 or less.

50. A scoured carpet having applied thereon a composition for imparting soil resistance, stain resistance, and stain release to said scoured carpet, said composition comprising:

- 5       (a) a first fluorochemical repellent component;
- (b) a second stainblocking component, said stainblocking component being selected from the group consisting of: sulfonated novalak resins, acrylic polymers, sulfonated polyester polymers, sulfonated surfactants, fluorochemical agents, acid-containing acrylic or acrylate polymers, copolymers, ethoxylated polyesters, ethoxylated
- 10      nylon, cellulose derivatives, polyacrylamides, sulfonated polymers, and sulfonated polyesters, and/or mixtures thereof;
- (c) an inorganic particulate component, said inorganic particulate component being selected from the group consisting of: silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing materials,
- 15      inorganic oxide materials, basic metal salt materials, and metal oxide materials; and
- (d) wherein said scoured carpet exhibits a relative resistance to dry soiling that reflects a color shade change delta delta E upon soiling and vacuuming in absolute value of about 10 or less.

51. A chemically treated fiber-containing scoured floor covering, said floor covering having applied thereon a composition for imparting soil resistance, stain resistance, and stain release to fibers upon the surface of the floor covering, said composition comprising:

- 5                 (a) a first fluorochemical repellent component;
- (b) a second component, said second component being selected from at least one item from the group consisting of: i) sulfonated novolak resins, and ii) acrylic resins, and iii) blends of sulfonated novalak resins and acrylic resins;
- (c) an particulate component, said particulate component being selected from the
- 10          group consisting of: silica-containing materials, zirconium-containing materials, titanium-containing materials, alumina-containing materials, inorganic oxide materials, basic metal salt materials, and metal oxide materials; and
- (d) wherein said chemically treated fiber-containing carpeting exhibits a resistance to dry soiling,  $\Delta \Delta E$  value, in absolute terms, of about 20 or less and further
- 15          shows improvement as compared to untreated floor covering when tested by modified AATCC Test Method 123-2000.